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AUTHOR	Farrell, Maureen; McGrath, Ian
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ABSTRACT

This paper examines the perceptions of the learning technology mentors (LTMs) involved in the development and implementation of the RMIT University (Australia) Online Bachelor of Nursing program. This program was identified as a strategic program within RMIT Life Sciences for renewal as there were major changes occurring in the disciplinary knowledge, professional practice and in higher education. Universities worldwide are seeking to enhance their competitive advantage in a changing environment. This competitive advantage grows out of the value it creates for its learners, either in terms of low prices or unique benefits. The Learning Technology Mentor program that the LTMs undertook to assist academic nursing staff in the renewal of the Bachelor of Nursing program for online learning is described. How the renewal program was developed and implemented is examined, identifying problems encountered in the process. The educational outcomes that emerged from the students' formative evaluation of the online learning program were both positive and negative and were consistent with the literature. A major issue was the reluctance of the students to move from a traditional learning/teaching paradigm to World Wide Web based course delivery. (Contains 20 references.) (Author/MES)

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ONLINE LEARNING IN AN UNDERGRADUATE NURSING PROGRAM: THE PERCEPTIONS OF THE LEARNING TECHNOLOGY MENTORS

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Maureen Farrell & Ian McGrath
Department of Nursing and Midwifery
RMIT University, Australia
maureen.farrell@rmit.edu.au
ian.mcgrath@rmit.edu.au

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Abstract

This paper will examine the perceptions of the learning technology mentors (LTMs) involved in the development and implementation of the RMIT Online Bachelor of Nursing program. This program was identified as a "strategic program" within RMIT Life Sciences for renewal as there were major changes occurring in the disciplinary knowledge, professional practice and in higher education. Universities worldwide are seeking to enhance their competitive advantage in a changing environment. This competitive advantage grows out of the value it creates for its learners, either in terms of low prices or unique benefits. The Learning Technology Mentor program that the LTMs undertook to assist academic nursing staff in the renewal of the Bachelor of Nursing program for online learning is described. How the renewal program was developed and implemented is examined, identifying problems encountered in the process. The educational outcomes that emerged from the students' formative evaluation of the online learning program were both positive and negative and were consistent with the literature. A major issue was the reluctance of the students to move from a traditional learning/teaching paradigm to web based course delivery

Keywords

online learning, undergraduate program, learning technology mentor program, nursing student, evaluation

Introduction

RMIT University is committed to be an Australian leader in the use of information and communications technology in the design and flexible delivery of innovative education, training and research programs. Developing quality online learning environments is a major focus of program and course renewal within RMIT University. The educational renewal for online learning is a strategic response to major changes occurring in disciplinary knowledge and professional practice, and in higher education. The Bachelor of Nursing program was designated as a "strategic program" within RMIT's Faculty of Life Sciences for online learning.

It was recognised that the introduction and increasing use of information technology has had, and is continuing to have, a profound impact on health care service delivery. Members of the nursing profession need, therefore, to be educationally prepared to use information technology effectively to enable them to practise nursing skilfully and safely across the continuum of care in the diverse locations in which health care services are provided. In the higher education sector, it is anticipated that the development of online learning will enhance the profile and marketability of the Bachelor of Nursing program and will be of particular benefit for rural students, offshore students, full fee paying students, alternative entry (Division 2 Nurses) and graduate nurses. RMIT Nursing

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conducts the Bachelor of Nursing program in the metropolitan (Melbourne) and rural areas (Hamilton and Sale) of Victoria. The development of online learning was also seen as a means to maximise students' choice of learning styles, location, time and place of learning.

This paper will examine the development and implementation of online learning for the Bachelor of Nursing program articulating the problems and challenges encountered in the renewal process, as perceived by the Learning Technology Mentors within RMIT Nursing. The program renewal began in 1999 and is ongoing. It will also examine the literature and provide a background to the establishment of the LTMs at RMIT University.

Literature Review

The introduction of online learning in higher education exemplifies the current paradigm shift that is occurring in higher education. Traditional classroom teaching methods are being replaced with the electronic classroom. With improvements in information technology there is a change from lecturer-centred to student-centred approaches in the mode of teaching. In this mode of teaching the teacher plays the role of facilitator, mentors and coaches rather than that of information broadcasters. Students are evaluated on their problem solving skills, rather than on how much material they could memorise and recall. Students also need to be more self-disciplined and have greater self-management. They must know what to learn, how to learn, and have the ability to evaluate their own learning. The challenge in this paradigm shift is to change the mindset of students to build up confidence, encourage reflection, while self-learning and developing their collaborative skills. Students need to view things differently critically and creatively (Pan, 1999).

Bates (2000) suggests that the multimedia technologies, including web-based learning, will influence the forms and nature of knowledge. He claims that learning in the twenty-first century will be increasingly integrated with work and everyday life. Learning will be required on demand and will be organised in such a way that it suits the lifestyle and needs of individuals. Learners in this type of environment will need to become more learner-focused; that is to challenge and question what they are being taught, draw on their own knowledge and experience, and be able to adapt what they learn to their own particular circumstances. Bates identifies three ways that multimedia technology affects both aspects of teaching and learning. These are:

> In how it presents information; in how students interact both with the medium and through the medium with the teacher and other learners; and in how knowledge is structured within multimedia (Bates, 2000, p .2).

Although these new technologies are fundamentally changing the nature of higher education Bates (2000) however cautions that we need to maintain a balance between face-to-face teaching and learning and technology-based teaching and learning. Many skills cannot or should not be taught solely through technology, although most teachers probably underestimate the range of knowledge of skills that can be taught effectively in such ways.

The literature revealed more reporting of information regarding positive and negative experience of web based educational delivery rather than systematic evaluation plans. According to Ryan, Hodson-Carlton and Nagia (1999) evaluations of online courses in the past decade have been varied in the types of software, hardware, and connectivity. However some similarities in student and faculty perceptions of positive and negative attributes of online courses have emerged. Students from a variety of disciplines, including nursing, appreciate the time flexibility, convenience, and lack of travel concerns of the electronically delivered course (Guernsey, 1998a, 1998b; Hiltz, 1986; Phillips & Santoro, 1989). Increased proficiency with computers is also viewed as a positive attribute as well as the electronic communication such as asynchronous discussions and the networking with colleagues (Conry, 1998; Cragg, 1994a, 1994b; Landis & Wainwright, 1996).

The negative experiences cited in the literature include hardware and software problems. These are frequent sources of high frustration for students and lecturers. The cost and need for technical

support to connect students electronically and the training of the students and teachers is a concern (Phillips & Santoro, 1989; Young, 1997). Other negative aspects of pedagogical issues include instructor time commitment to design, support, maintenance, and monitoring of electronic communications (Guernsey, 1998b; Phillips & Santoro, 1989; Smith, 1994; Young, 1997).

The literature also identified some research studies that compared the effectiveness of online delivery to traditional onsite classroom delivery of education. Phillips and Santoro (1989) evaluated a group discussion course to a computer-mediated communication course. The results from more than 500 undergraduate students showed that the computer-mediated method produced more frequent student contact with teachers. There was also a high level of course approval by students and group discussion outcomes equalled or excelled those of the courses taught in the traditional manner. The logistic and pedagogical problems identified with the computer-mediated communication course included hardware, software, and connectivity problems. Teacher workload time in maintaining asynchronous communication with students was also a significant finding.

Another study conducted by Ryan, Hodson-Carlton and Nagia (1999) evaluated undergraduate nursing students perceptions of classroom and web-based teaching. They surveyed 96 student nurses and the questionnaire was designed to evaluate students' perceptions of the experience in the classroom and their participation in the course via web based modules. They found that classroom methods rated significantly higher in relation to content, interaction, participation, faculty preparation, and communication. Technical skills rated higher for web based modules. Critical thinking and time allotted for assignments were not significantly different between classroom and web based modules. There were many open-ended comments and supported both negative and positive aspects of classroom and web based modules. These researchers claim that web based learning is the new paradigm in higher education delivery. The benefits, such as increased access, resources, and opportunities for diversity, far outweigh the problems and will take the nursing profession into the next century.

Renee Leasure, Davis and Thievon (2000) compared student outcomes taught in an undergraduate research course using both web based distance learning technology and traditional pedagogy. The students were given a choice of delivery and the reasons cited for selecting the web group section included cost, convenience and flexibility. Reasons for enrolling in the traditional classroom section included the perception of increased opportunity for interaction, decreased opportunity to procrastinate, immediate feedback, and more meaningful learning activities. The findings showed that there was no significant difference in examination scores between the two groups on three multiple-choice examinations or for the course grades. It was reported that students who were self directed and had the ability to maintain their own pace and avoid procrastination were most suited to web based courses. The other benefits of the web based course were the new methods of communication that were traditionally nurtured in the classroom setting and the teaching of computer skills that enhanced their confidence with the computer. What they also found was that student's writing skills improved over time.

What the literature shows is that web based courses are here to stay and can no longer be viewed by universities as an innovation. The challenge, like Bates (2000) says, is to determine what needs to be taught by this medium yet keep a balance between face-to-face teaching and learning and technology-based teaching and learning.

Background

The RMIT Teaching and Learning Strategy aims to provide a student-centred learning environment and one way to achieve this is to develop flexible learning modes using a range of educational technologies which expand students' learning opportunities and encourage staff to become facilitators of learning. The university provided money from the University Strategic Investment Fund for curriculum and courseware development, and for staff development. The need to harness information technology was recognised as a means of achieving student-centred, flexible learning environments. The Bachelor of Nursing program was identified by the Faculty of Life Sciences as

a "strategic program" and this was to be developed "at a distance mode" for online learning. The RMIT Teaching and Learning strategy describes two modes of online learning (RMIT, Framework for Learning. Online)

One of the initiatives undertaken by RMIT Learning Technology Services to achieve the objective of the Teaching and Learning Strategy related to online learning was to appoint Learning Technology Mentors in each department. Learning Technology Services (LTS) was established early in 2000 to progress the Information Technology Alignment Project (ITAP) objectives that are a key component of the Teaching and Learning Strategy. The ITAP objectives focuses:

> On the use of information technology in learning by identifying that information technology will be used to enrich the learning environment by augmenting traditional methods rather than displacing them. The emphasis is on interactivity and time/space independence and flexibility (McNaught, Kenny, Kennedy & Lord, 1999; p. 4).

The Learning Technology Mentor (LTM) program at RMIT University provided for academic staff to have one day per week time release over one semester, in order to:

- learn how to use the university's recently established online education system,
- design and implement online learning in the Faculty's education programs, and
- promote and support similar activities among colleagues in the Faculty.

The LTM program ran from mid-1999 to the early part of 2001, and was jointly supported by the University's Learning Technology Services and the university's seven Faculties. The drive to online learning was central to a university-wide teaching and learning initiative to improve the quality of programs by renewing their educational design and adding greater flexibility to modes of studying them. We, the LTMs in the Department of Nursing and Midwiferey, undertook the program in 1999, 2000. The formal program was about a week long, in both three-day workshops and in shorter sessions. At the end of the formal session we had to produce a work contract that was to be signed off by the Head of Department, the Dean of the Faculty and the Director of ITAP. Funding was provided to the department for time release if we had successfully completed the requirements of the contract. In developing the contracts we were advised to negotiate and be supported by the Faculty Director of Teaching Quality, the Director of Information Technology, Learning Technology Services Professional Development Team, and ITAP.

In all activities we had to provide evaluation strategies and performance targets. We both decided to work together within the department to achieve the objectives of the LTM contract. For one of us this was the second year as a LTM within the department. Another requirement of the contract was a written report that highlights significant outcomes and issues for students, staff, and infrastructure services and for the mentors themselves. These reports provided information for the program teams, the Faculty and Learning Technology Services to inform continuing course and program renewal for online learning in 2001 and beyond. They also provided the opportunity for us to reflect on our work during the Semester and in previous Semesters. The funding for our time release was subject to satisfactory reporting on our LTM activities in the five major program outcome areas – content development; student learning experiences; staff interest in learning technologies; personal professional outcomes; system and program performance. Both our reports were satisfactory and our department received the funding for our time release.

Developing the RMIT Online Bachelor of Nursing Program

In developing the RMIT Online Bachelor of Nursing program we worked closely with the Faculty Director of Information Technology and Director of Teaching Quality to ensure that we were meeting the targets of the Faculty Program Renewal Schedule. The *first phase* of the renewal was to have a component of all the core courses (subjects) offered in Semester 1, 2001 to be online by December 16th 2000. The *second phase* was to develop all the 2nd Semester core subjects plus the electives offered by June 1st 2001.

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All nursing academic staff were informed by the Head of Department that they would be required to develop a component of their course for online learning and staff developments activities were established as it was acknowledged by RMIT University that most would not be skilled in this area. We were seen as an integral part of the staff development activities and were responsible for organising the activities at a group and an individual level. We organised two planning days for the Bachelor of Nursing program team to examine how they were going to develop the online component for their courses. These planning days were conducted off campus and attendance was compulsory. It was imperative that all academic staff members were informed and encouraged to use online learning approaches. While some staff were comfortable with using computer based instructional materials many were not and this was mainly due to inappropriate computer equipment and the reluctance to embrace the new learning technologies. Supplying appropriate computer equipment became a priority within the department and this was achieved half way through Semester 1, 2001.

We also worked closely with the Learning Technology Services in directing staff to professional development sessions offered by them. The professional development program offered by the Learning Technology Services is twofold. Firstly, it provides training in the Distributed Learning System (DLS) tools, and secondly it offers a professional development program to assist staff in designing online courses. The DLS was designed to be flexible, pedagogically sound and user friendly that is the academics using it did not have to be technological geniuses (McNaught et al., 1999).The training sessions for the DLS system provided a basic introduction to the four tools used. These are: Course Information (classroom), WebBoard (conference), QM Perception, and WebLearn (critique).

The Learning Technology Services Professional Development Team first offered these sessions to academic staff in Semester 1, 1999. These sessions are conducted on a regular basis and are repeated throughout the academic year. Many of the nursing academic staff has attended all of these sessions. For those staff that could not attend the DLS training sessions, the Professional Development Team provided customised workshops. We worked closely with this team to ensure that the workshops integrated the tools with the educational design strategies adopted for the Bachelor of Nursing program.

We also encouraged staff to attend the series of workshops offered by the Professional Development Team in designing online courses using the DLS. Listed below are examples of topics that were offered and like the training sessions on the DLS tools, they were offered throughout the academic year.

- Assessment strategies for online courses
- Copyright issues for online course development
- Education design for content development
- Educational design strategies for online communication
- Evaluation strategies for online courses
- Library resources to support online course development
- Project planning for developing online courses
- Publishing standards for online course development
- Quality approval processes for online courses
- RMIT overview - policies and processes.

Information on production and resource developments was also provided in the Staff Lounge that can be accessed by all RMIT staff from the Learning Hub (Online@RMIT). Nursing staff were also directed to this resource. Although many nursing academic staff attended these sessions we also needed to conduct them within the department to provide more opportunities for staff attendance. Most of the staff took advantage of the sessions offered within the department and the wider university. There were some staff that were having difficulties in adapting to the new technology and we felt powerless to change this. For whatever reason they were not willing to cooperate and we had done all we could to encourage and motivate them.

The Learning Technology Services Professional Development Team also offered throughout the academic year a wide variety of seminars with guest speakers from within RMIT as well as

externally. Many nursing staff attended these sessions and they helped in the development of their courses. We were also available to staff for specific assistance in the development of their courses and staff could negotiate with the Head of Department variation to their workload to allow them to focus on the course developments. Many did this so they could meet the deadline for the implementation for the 1st phase of the Bachelor of Nursing program renewal.

Implementing the Online Bachelor of Nursing Program

Phase 1 of the Bachelor of Nursing program

Phase 1 was to have all core courses completed and available in a flexible delivery format, including online learning, by Semester 1, 2001. This objective was achieved and all core courses and one elective for the Bachelor of Nursing program did have an online presence for Semester 1, 2000.

It was recognised that students would need some orientation on how to access and use the online learning activities provided in the core courses. The Bachelor of Nursing program is conducted over three years and there are core courses in each year. Two of the core courses (Year 1) had been offered in a flexible online mode since 1999 so some students were familiar with online learning, but not all. We negotiated with the Director of Information Technology within the faculty to provide sessions to students during the orientation week. This occurred however it was in a lecture format and the students did not have access to a computer. Due to the large numbers in nursing, approximately 250 students in each year, including the Hamilton and Sale Campus, it was impossible to give them all computer access. We did manage to orientate the Hamilton and Sale students using computers, as there numbers were manageable. The large number of nursing students is an issue, not only for orientation but also for the course coordinators especially in the area of communication with students. Answering emails and generating discussion and keeping it going is virtually impossible when dealing with 300 students.

The principal tool used by the course coordinators is the Classroom in the learning hub with some use of QM perception for assessment purposes. Some staff also used Netscape composer to create pages and used HTML tags in the classroom areas to enhance the presentation. This was particularly useful with the links to full text proquest journal articles.

Some delays were also experienced due to academic staff not being able to install QM perception on new computers. This is a result of inadequate consultation by the faculty IT support personnel and the network administrator. The network is also slow at times which delays progress.

Formative Evaluation of Phase 1

To determine how students were managing the online learning activities we distributed a questionnaire four weeks into the semester. The questionnaire was distributed to Year 2 students as all their courses in Semester 1 had an online presence. The questionnaire was designed to look at computer access as well as online delivery of courses. We received back 119 completed questionnaires and the feedback was valuable as it influenced phase 2 of the development process.

With regard to the online delivery of the courses, students were asked two questions related to each course. These were: What do you like about the delivery of the course? and What don't you like about the delivery of the course? The questions were open ended, as we wanted students to express what they really felt about the online learning. The responses were varied and the issues from the data are summarised below.

Preparation of Students for Online Learning

One of the major problems identified from the data was the preparation of students for this mode of learning. This is reflected in the following responses:

- "I believe that we should have been told last year about the online learning. We should have been able to have an impact on the idea. It is far too expensive for the fees when we are never here. I'm just really annoyed about the whole thing and believe that we as students should have

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been able to decide whether we wanted online learning or not as it is our education."

- "I think the online component was too much, too fast. The first term would have been an easier transition if more time were spent in tutorials to actually discuss the topic matter as well as solving any online access issues. I think lots of people were anxious in being able to access all the information available."
- "I think it is a lot more difficult to do things this way (i.e. over the internet). Firstly it is more time-consuming, a lot more confusing and inconvenient for many people if they don't have the Internet or few computer skills!!!! It would be helpful to have lecturers who know how to explain how to use the learning hub or a course to teach us."
- "I think we should have been told last year about the online learning. Why pay $4000 approximately for learning off a computer when you also have to pay $337 to attend uni and then $? Access the internet from home."

This feedback indicates that students needed more preparation for online learning and the option to choose traditional pedagogy. We are addressing this for Semester 2. There were also some program management issues that also contributed to this problem. The literature shows that students web-based courses require a certain level of computer literacy if they choose this mode of educational delivery and they need to be well prepared or trained in this area.

Educational Outcomes

The educational outcomes for the students were both positive and negative. The positive responses related to the content provided, the self-directed learning and being able to work from home and these are reflected in the following responses:

- "I feel that having an online component is a great idea. Accessing and being involved in discussions and finding info at your own leisure at any time of the day is quite convenient. It also motivates me to do work!!!!"
- "Can access at own pace, can link to journals, easy to negotiate around site."
- "The huge amounts of resources that are available like articles and links."
- "Less travelling and easier to study at home."
- "Easier to access information in relation to subjects whenever we want or when hub is available."
- "Access to work/notes to prepare for tutorials and get ahead if you want to, flexible-able to work when it suits, weekly exams are good."
- "You are able to access at anytime, which fits in well when you are working, etc. It allows you to study at any time you like and allows me to work due less contact hours."
- "I like that you can work at your own pace and its is a different way of learning."
- "Freedom. No crowded lectures with loud students. Autonomy and responsibility."
- "Overnight availability is user-friendly for night-shift workers such as me."
- "There are very clear course documents and outlines."
- "I prefer to do the tests each week instead of a big mid year exam."
- "Discussion board and online test (weekly)."
- "No long lectures that bore you to death."

We can see from the above responses that many of the students enjoyed the online activities. These positive experiences are consistent with the literature. Whether these students have had significant learning gains is too early to ascertain however feedback from the clinical area, where these students integrate the theory component of the courses, indicate that the knowledge level was impressive and much better than last year. In one course, Medical Nursing, students commented on how they had covered all the diseases they encountered in the clinical area in the online learning. They commented on how well prepared they were when caring for patients with these disorders.

The negative responses mostly related to the lack of class time, lack of orientation to online learning, cost of education and home internet, too much information, and the fact that they were "nurses" not "computer whizzes". The lack of class time was a problem for many of the students and this could have been avoided if there was more communication within the program team. There was lack of planning on how all course coordinators were going to deliver their online

component to the course. This resulted in lack of class time and the only student contact was hourly tutorials and some planned nursing laboratory sessions. This did not mean less time for the lecturers as conducting tutorials for groups of 20 to 30 requires more contact time. Some of the students' responses are listed below:

- "The amount of contact hours per week. I would prefer to have more compulsory labs and classes per week."
- "Lack of interaction (physical) with other students and lecturers."
- "Not enough hands on! 1 hour tute not long enough to reinforce learning."
- "Its not so much the online sites but the lack of contact hours that I don't like."
- "Nearly everything!!!! Harder to be motivated to learn in front of a computer rather in a class full of people where you can discuss/ask questions etc. It is also inconvenient for some people don't have Internet or computers at home."
- "Lectures are needed. It is a must, OK, I'm thinking of transferring to La Trobe, they seem to be offering more for our money."
- "I just feel that nursing isn't what it should be, nursing is a hands on profession and we aren't getting any of that."
- "What are we paying fees for? Where does the money go?"

The limited face-to-face class time has been addressed for Semester 2 and there will be more face-to-face teaching. One of the issues relating to this is the number of student nurses doing the online course. There can be over 300 enrolled in a course and there may be only two academic staff teaching in this course. The feedback from students indicates that they want the traditional methods of teaching combined with the online learning. This raises the issues of staff workload. Many of the staff within the department have had their workloads increased since the introduction of online learning. For online learning to be effective this issue has to be addressed within the department, the faculty and the wider university. Additional staff are needed to assist with tutorials, laboratory sessions and the management of online communication such as the threaded discussion boards and the email. There are some courses within the Bachelor of Nursing program that do not require extensive laboratory sessions and would not require as much assistance yet two nursing staff would still be responsible for approximately 200 students, far too many for some aspects of online learning.

Another reason for the limited face-to-face class time related to the nursing staff's perception of what was required to be put online. We questioned the RMIT Teaching and Learning strategy interpretation of "at a distance mode" of online learning and what was meant by "substantially" online. There was never a definitive answer or explanation. Many nursing staff put most of the course online and the only traditional teaching method required was a tutorial that meant reduced traditional face-to-face contact hours. This issue has to be dealt with if the online learning is to be successful within the department.

Student Computer Access

The feedback from students regarding access to the online learning materials was varied. Some of the students had no difficulty whereas others did and found the experience very frustrating and negative. This is reflected in the following student comments.

- "Sometimes I cannot log into the computers. The account name and password cannot recognise even though they are correct."
- "I have a big problem to get access to the DLS from home."
- "At home whenever I log on to student Email I get logged out after about 20 seconds and this happens again and again."
- "Sometimes you can't access email services, it cuts you off, and you have to log in again and again."
- "Don't have the Internet at home, couldn't access the Hub using my ID number."
- "I tried to get the Internet through the email-student discount. This was a complete waste of time! I was eventually told through oz mail that RMIT had failed to give them some information they were waiting on, ended up going through someone else. This wasted 2 weeks."

While students had access to computers facilities on campus they had to share these resources with students from other disciplines. Those who did not have access at home felt disadvantaged in

completing the online learning activities. Many of the problems related to student's access could have been avoided if they were better prepared. A lot of the problems were associated with user error. The need for hands on training in using the computer cannot be overstated, even for students who rate themselves as computer literate. Technical difficulties such as suitable computer access and network reliability created significant problems for some students. The student email system provided to all students at RMIT would time out within seconds of access for many students. While this was identified as a problem it was not resolved and continues to frustrate students. These issues need to be solved if online learning is to be successful at RMIT. These findings were consistent with the literature as most of the problems identified related to hardware, software and connectivity.

Phase 2 of the Online Bachelor of Nursing Program

The second phase was to develop all the Semester 2 core subjects plus all the electives by June 1st 2001. In March 2001 a Project Manager from outside was employed to assist with the program renewal of the Bachelor of Nursing Program. It was seen that this person would be more effective in facilitating the process of getting the courses and electives online. As mentioned earlier there was some nursing staff reluctant to embrace the new learning technologies. An outside Project Manager would perhaps provide more motivation for these staff members. The LTM program is not currently being conducted by RMIT Learning Technology Services, as there are now sufficient LTMs within the university who have been trained in developing online teaching and learning activities for the colleagues within their departments. The second phase is ongoing, all the core and elective courses have an online presence and they will be online for students in Semester 2.

Reflections

On reflection one of the major challenges to come out of our experience is that people cannot get away from the traditional paradigm of teaching that requires students to sit and listen to a lecture to learn. This view of teaching and learning is not only limited to students but also to many of our colleagues. We need to maintain a balance between face-to-face teaching and learning in nursing and understand what should be technology-based and what should be taught in the traditional classroom or laboratory setting. We also need to embrace the changing role of both learners and teachers, in order to exploit the benefits of online learning.

Despite these rather negative comments the opportunity to undertake the role of LTMs has enhanced our knowledge and confidence in developing online teaching and learning activities. There is enormous potential to develop these strategies further with industry as it has the potential to lessen the gap between nursing theory and practice in the real world of health care delivery.

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